

A PRELIMINARY REVIEW OF *ZELANOPHILUS* WITH  
DESCRIPTION OF A NEW AUSTRALIAN SPECIES  
(CHILOPODA : GEOPHILOMORPHA : GEOPHILIDAE)<sup>1</sup>

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The genus *Zelanophilus*, hitherto known only from New Zealand by a single species, *provocator*, is of special interest for several reasons. First, it is restricted, so far as we know now, to New Zealand and Australia yet is clearly similar in certain notable features to some equally bizarre genera known sporadically from the Indo-Australian area, e.g. *Tasmanophilus*, *Australiophilus*, *Sogophagus*, *Eucratonyx*. The suprageneric allocation of these and of some other evidently related genera has never been demonstrated convincingly. Secondly, *Zelanophilus* on the basis of some characters could be construed as occupying an almost annectant position between the Geophilidae (Geophilinae) and that section of the Schendylidae typified by *Escaryus*. A full discussion of the higher categorical considerations involved is beyond the scope of this paper but will be treated in a future publication whose supportive studies are still being undertaken. At this time I wish to clarify the identities of the genus and its type-species, *provocator*, and to describe a new species of the genus. It is of particular interest in that it is the second one known and extends the known distribution of *Zelanophilus* (*sensu stricto*) to Australia.

Like *provocator*, the new form exhibits the following especially significant, generically diagnostic characteristics. The teeth of the mandible are weakly but distinctly heterogenous. The first maxillary coxosternum is continuous centrally, not divided, and lacks lappets. The claw of the second maxillary telopodite is coarsely bristled (hispidate). A clypeal fenestra (clypeal area) is absent. Well-developed or vestigial *anterior* clypeal smooth areas (plagulae) are present. The labral sidepieces are in contact with each other or nearly so, i.e. the

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midpiece is apparently suppressed or weakly discrete and small: the sidepieces are fringed with a single row of long hyaline filaments. The pleurograms (chitin lines) of the prosternum are abortive, short, and concursive with the pleuroprosternal sutures. On the anterior part of the body each sternite has a large, single, posterior porefield; posteriorly on the body these divide in two. The anterior parunguis (of each pretarsus) is short and thin (not grossly hypertrophied as in *Eucratonyx* and *Sogophagus*). The coxopleural pores open singly and freely on all parts of the coxopleuron; they are not cavitate. The ultimate tarsus is bipartite; its pretarsus is strongly unguiform. The gonopods of both male and female are entirely separated from each other, and each is distinctly bipartite. Anal pores are present.

The two species differ from each other in the following notable, diagnostic characteristics.

*Zelanophilus provocator*: (1) Ventral porefields absent on 3-4 sternites anterior to the ultimate. (2) Final 4-5 sternites very densely clothed with fine setae. (3) First maxillary lappets absent. (4) First pedal tergite and those following on anterior quarter of body strongly bisulcate; the same tergites with extensive unpigmented areas. (5) First 4-6 spiracles very strongly and narrowly elliptical in shape. (6) Ultimate tergite much longer and narrower than that of *pococki*. (7) Central labral teeth deeply pigmented and as a group usually slightly separated from adjacent teeth. (8) Plagulae (smooth or lissate areas) of anterior clypeus typically large and prominent. (9) Pedal segments 67-77.

*Zelanophilus pococki*: (1) Ventral porefields present on all sternites except the ultimate. (2) Final 4-5 sternites' vestiture like that of those preceding, not contrastingly densely clothed with fine setae. (3) First maxillary lappets present. (4) First pedal tergite and those following on anterior quarter of body not sulcate or at most only very weakly so; the same tergites completely or nearly completely deeply pigmented. (5) First 4-6 spiracles round or nearly so, at most only very slightly, broadly elliptical. (6) Ultimate tergite much shorter and wider than that of *provocator*. (7) Central labral teeth weakly or not at all pigmented; as a group not separated from adjacent teeth. (8) Plagulae of anterior part of clypeus typically absent or at most very weak, small, and fragmented. (9) Pedal segments 59-73.

#### *Zelanophilus provocator* (Pocock)

*Geophilus provocator* Pocock, Ann. Mag. Nat. Hist., (6)8, p.225, 1891.

*Zelanophilus wheeleri* Chamberlin, Bull. Mus. Comp. Zool., Harvard, 64, p. 50, 1920. Archey, in Rec. Auckland Inst. Mus., 2, p. 51, 1936.

*Zelanophilus kapitii* Archey, Rec. Canturbury Mus., 2, p. 73, 1922. Archey, in

- Rec. Auckland Inst. Mus., 2, p. 73, 1922. Archey in—1c: OIF.e, B6.e  
 Rec. Auckland Inst. Mus., 2, p. 51, 1936.  
*Mesogeophilus wheeleri* (Chamberlin). Attems, in Das Tierreich, Lief., 52,  
 p. 195, 1929.  
*Mesogeophilus kapiti* (Archey). Attems, in Das Tierreich, Lief. 52, p. 195,  
 1929.  
*Geophilus provocator* Pocock. Attems, in Das Tierreich, Lief. 52, p. 201,  
 1929. (Retained in *Geophilus* but questioningly referred to *Pleurogeo-*  
*philus*).  
*Australiophilus microtrichus* Attems, Sonderabdruck, Ann. Naturhis. Mus.  
 Wien, 55, p. 65, 1947. (New Synonymy: holotype seen).

Type-species: *Zelanophilus wheeleri* Chamberlin, 1920. (= *Zelanophilus provocator* (Pocock, 1891)). (Monobasic and by original designation).

Pocock based *provocator* upon two male specimens, each with 69 pedal segments, which the officers of the Challenger Expedition had collected at Wellington, New Zealand. His original description is composite, and he selected no lectotype. I have studied both specimens at the British Museum and find them to be conspecific with many non-typical specimens collected by Mr. P. M. Johns and his colleagues in New Zealand as well as with the typical series of *wheeleri* that I have studied at the Museum of Comparative Zoology, Harvard. I have selected one of Pocock's specimens as the lectotype and have labelled it accordingly. When I found the Pocock specimens, their heads and mouthparts had been removed and could not be located. None the less, the remaining body parts, in excellent condition, are quite sufficient for the confident identification of comparison material.

So far as is known, and excluding *ferrugineus*<sup>2</sup> from *Zelanophilus*, *provocator* is the sole species of the genus (*sensu stricto*) inhabiting New Zealand. The characters distinguishing it from *pococki*, Pocock's original description, and Archey's redescription of 1936 (p. 51) should readily facilitate its identification.

According to Archey (1936, p. 52), *provocator* is very common throughout South Island but his records showed that it is known from only a few localities on North Island. Thanks to Mr. Johns and his colleagues I am gradually acquiring considerable material from all

<sup>2</sup>Dr. Archey (Rec. Auckland Inst. Mus., 2, p. 52, 1936) has included *ferrugineus* (Hutton, 1877) in *Zelanophilus*. I have examined one of Hutton's syntypes at the British Museum and a clearly conspecific specimen collected by Mr. Johns and have come to the tentative conclusion that the species, at least until more is known about the whole generic complex, is more advantageously placed in *Australiophilus* Verhoeff, with whose type-species, *longissimus*, it is almost certainly congeneric (New Combination). The nature and systematic location of the Hutton species will be discussed in a forthcoming publication.

parts of New Zealand, so that at a not distant time in the future it should be possible to issue an extensive list of localities for this and other New Zealand geophilomorphs.

***Zelanophilus pococki*<sup>3</sup> new species**

Holotype: Female. Type locality: Australia, New South Wales, Hornsby; August 21, 1931; William Morton Wheeler, leg. Disposition: Myriapod Type Collection of the Museum of Comparative Zoology, Harvard University.

INTRODUCTORY. Total length: 67 mm. Pedal segments: 73. Body shape: Width essentially uniform from front to rear; however, the final 5-6 segments slightly narrowing. Color: Head and tergites approximately of anterior two-thirds of body yellowish-brown; without extensive unpigmented areas (cf. *provocator*); legs and underparts in general paler in color.

ANTENNAE. Length (unextended in balsam): 3.75 mm. Shape: Distally very slightly attenuate; not flattened. Vestiture (dorsal aspect): From 2nd to final article the setae decreasing gradually in length and increasing gradually in number. Ultimate article on lateral and mesal surfaces with an elongate patch of short, hyaline, robust specially-modified setae. CEPHALIC PLATE. Dimensions: Greatest length, 1.44 mm; greatest width, 1.32 mm. Shape: Sides slightly excurved; anterior and posterior margins straight. Setae short and sparse. Frontal suture present but obscure. Prebasal plate concealed. CLYPEUS. As limited laterally by paraclypeal sutures much wider than greatest length. Paraclypeal sutures: Sinuous; posteriorly passing toward but failing to join middle of labral fulcra (fulturae). Fenestra (clypeal area) absent. Immediately behind anterior margin of clypeus on each side of midline a very weak, fragmented, obscure plagula (lissate or smooth area). Well-defined, large prelabral plagulae present. Setae: Anterior third of clypeus across its entire width with numerous long setae randomly disposed; remaining two-thirds of clypeus glabrous; prelabral pair of setae absent. LABRUM. With prominent anterior alae, these completely separated from clypeus by a continuous suture. Sidepieces: Apparently contiguous centrally, the midpiece either incorporated into them or concealed by them; centrally-located teeth very slightly pigmented and shorter than the lateral filaments which are long, thin, and hyaline. Fulcrum: Massive;

<sup>3</sup>Dedicated to Reginald Innis Pocock, late of the British Museum (Natural History), a pioneer student of the myriapods of the Australian area. Dr. Pocock's writings, though undertaken at a comparatively early time, still stand as outstanding examples of remarkable systematic intuition and discernment and unambiguous clarity of exposition.

strongly obliquely oriented to long axis of the head. MANDIBLE. Teeth fundamentally heterogenous; those of about  $3/4$  of the distal margin aciculate and hyaline, thinly filamentous; those remaining abruptly longer and more robust. FIRST MAXILLAE. Coxosternum: Medially continuous with division, diastema or suture; lappets absent. Telopodite: Distinctly bipartite; with a large, fleshy lappet, this largely concealed from ventral aspect. Dorsal surfaces of medial lobes and telopodites very densely clothed with minute setae. SECOND MAXILLAE. Isthmus anteroposteriorly very shallow but without diastema or division of any kind. Postmaxillary sclerite very extensive, extending anteromesally partly to occlude metameric pore opening. Telopodite: With prominent, strong dorsal and ventral basal condyles; articles inflate, robust, the 2nd and 3rd especially setose; terminal claw with numerous aciculate, long spines arising randomly on its distal half. PROSTERNUM. Much wider than long. Anterior denticles abortive, low, weakly-developed. Pleuroprosternal sutures arching obliquely laterad, complete, ending dorsolaterally. Pleurograms (chitin lines) abortive, short, concursive with pleuroprosternal sutures. PREHENSOR. When flexed not exceeding anterior margin of head. In general very robust and short. Tarsungula dark, its length about equal to outer length of trochanteroprefemur; dorsal and ventral edge of blade smooth, not serrulate; poison calyx very long, terminating in intercalary articles; poison gland terminating near base of trochanteroprefemur. Denticles: Mesodistal denticle of trochanteroprefemur low and blunt; femorid and tibiid each with a minute rounded denticle; tarsungula without a basal denticle. TERGITES. Basal plate anteriorly as wide as rear margin of cephalic plate, posteriorly as wide as first pedal tergite; color yellowish-brown except for very small unpigmented central area. Color: On anterior portion of body deeply yellowish-brown, thereafter gradually becoming paler; entirely without extensive unpigmented areas. Paramedial sulci: On anterior part of body essentially absent and pigmented (not unpigmented as in *provocator*); thereafter gradually becoming more apparent. Setae short and relatively numerous. SPIRACLES. All strictly circular except for first 2-3 which are very slightly subcircular. LEGS. Those of anterior third of body very robust and short, thereafter gradually becoming longer and more slender. Setae much longer and more numerous than in *provocator*. PRETARSI. Each unguis (claw proper) short and robust on anterior half of body, thereafter becoming longer and thinner. Each anterior parunguis thin and only about  $1/3$  as long as its unguis; each posterior parunguis so minute as easily to escape detection. STERNITES. Those of anterior third of body each

with a deep anterocentral fovea and shallow longitudinal sulcus on posterior third; each much wider than long; carpophagus-structures absent. Setae short and relatively numerous (but final sternites not abruptly more densely setose than preceding sternites). Subcoxal and anterolateral porefields absent. Posterior porefields: Double on each sternite from first through the penult; those of anterior quarter of body very narrowly separated (often grossly appearing single); on posterior part of body the porefields clearly separating and becoming smaller. ULTIMATE PEDAL SEGMENT. Pretergite with pleurites fused without lateral sutures; much wider than preceding and succeeding tergites. Tergite: Sides parallel; rear margin evenly rounded; greatest length about 1.25 times greatest width. Presternite centrally divided. Sternite: Anterior margin straight; sides strongly convergent; length to width at midlength = 1 : 0.71. Coxopleuron: From dorsal aspect extending forward only to rear of penultimate segment; less swollen than in *provocator*; pores numerous, opening freely, piercing all sides. Ultimate leg: Only very slightly swollen (less so than in *provocator*); tarsus double, the two parts equal in length; pretarsus short, robust, strongly unguiform. POSTPEDAL SEGMENTS. Gonopods completely separated, unfused basally but contiguous; bipartite, the ultimate article conical. Anal pores lateral, concealed, large.

THE PARATYPES. All of the paratypes are Australian and are deposited in the British Museum (Natural History).

Paratype A: Male, 59 pedal segments, 44 mm; New South Wales; Number 1935.3.26.30. Paratype B: Female, 61 pedal segments, 38 mm; New South Wales, Dorrigo; Number 1936.3.3. Paratype C: Female, 73 pedal segments, 62 mm; New South Wales, Hornsby; Number 1925.7.10-11 (part). Paratype D: Female, 73 pedal segments, 53 mm; New South Wales, Hornsby; Number 1925.7.10-11 (Part). Paratype E: Female, 61 pedal segments, 51 mm; Hornsby; Number 1925.7.10-11 (part).

The paratypes do not differ significantly from the holotype except as noted above. The single male, Paratype A, differs from the females in having its ultimate legs distinctly more inflated and more densely pubescent; as in the females, its gonopods are separated and distinctly bipartite.